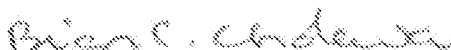


I hereby certify that, on the date shown below, this correspondence is being transmitted via the Patent Electronic Filing System (EFS) addressed to Examiner Forman at the United States Patent and Trademark Office.

Date of Signature and Deposit: June 26, 2007


Brian C. Cholewa, Reg. No. 58,392

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Roland Green, *et al.*

Date: June 26, 2007

Serial No.: 10/061,577

Art Unit: 1634

Filing Date: January 31, 2002

Examiner: Betty J. Forman

Title: CORRECTION FOR ILLUMINATION
NON-UNIFORMITY DURING THE SYNTHESIS
OF ARRAYS OF OLIGOMERS

File No.: 700706.90068

Confirmation No.: 9636

DECLARATION OF HAROLD R. GARNER

Dear Sir:

1. I, Harold R. Garner, am the same Harold R. Garner who is the named inventor of US Patent No. 6,295,153. I am currently a Professor of Biochemistry and Internal Medicine at UT Southwestern Medical School in Dallas, Texas. I am also a Philip O'Bryan Montgomery, Jr., M.D. Distinguished Chair in Developmental Biology. A copy of my *Curriculum Vitae* is attached as Exhibit A. My expertise for the last decade has been in the study of Digital Optical Chemistry (DOC), also know as Maskless Array Synthesis (MAS). I have published extensively in this area and have written several state-of-the-art review articles on this subject.

2. I am not an employee of NimbleGen Systems, Inc., assignee of the present application at issue. At times, however, I am a collaborator with the inventors on this application and the assignee because of our interest in Digital Optical Chemistry and microarray technology.

3. I have reviewed the January 5, 2007 Office Action issued in this matter by the US Patent and Trademark Office. I understand that Claims 1 and 6-9 are rejected under 35 U.S.C. §

103 as obvious over a combination of US Patent No. 6,295,153 (Garner); US Patent No. 6,262,795 (Sweatt & Stulen); and US Patent No. 5,870,176 (Baker *et al.*). I also understand that the Examiner alleged that although Garner and Sweatt & Stulen do not teach adjustment of micromirrors based upon a mathematical evaluation of illumination differences to correct non-uniformity across an area, it would have been obvious to one skilled in the art in view of Baker *et al.* In this regard, I wish to respectfully disagree with the Examiner's position.

4. I have read through each of the cited documents and believe that the combination of cited documents does not disclose or contemplate the pending claims in US Patent Application No. 10/061,577. With respect to my patent (Garner), I note that it is directed toward a digital optical chemistry instrument, which includes digital light processing (DLP) controlled by a computer and fluidics system. My patent eliminated the previous need for masks in photolithographic processes. In the Office Action, the Examiner cited passages (*i.e.*, Column 7, lines 46-51 and Column 8, line 56 through Column 9, line 9) from my patent that disclosed the importance of UV intensity and exposure time. While these passages highlight the importance of illumination intensity, it was in the context of obtaining a high contrast ratio for light emerging from the DLP micromirror system and optical elements used to focus the light for a surface chemistry reaction. These passages do not suggest that illumination intensity can be adjusted at the level of individual micromirrors. In fact, these passages relate to a distribution of light in a microarray instrument on a global level (*i.e.*, across the entire DLP micromirror chip containing hundreds of thousands of micromirrors, not at the resolution of individual micromirrors). This is in sharp contrast to the application at issue, which relates to the distribution of light at an individual micromirror (*i.e.* pixel) level. One skilled in the art understands that these are not the same. As noted in the application at issue, non-uniform illumination of a substrate results from non-uniformities in the light source itself, as well as non-uniformities in the light path between the light source and the substrate.

5. The Examiner also cited a passage (*i.e.*, Column 4, lines 43-46 and 54-60) from my patent that discusses using a shutter to decrease the amount of light striking the micromirror. While this is true, the shutter does not correct for non-uniformities from the light source or from other optical elements in the light path at the pixel level, but only at the global level. The sole purpose of the shutter was to decrease the accumulation of UV-induced damage to the

subsequent optical components, especially to the DLP micromirror system. Also, this passage does not suggest measuring illumination intensity at different positions (*i.e.*, individual pixels) on a microarray; evaluating the intensity differences and then adjusting the intensity of brighter positions to match that of the dimmer or less bright positions. This technique is also known as pulse modulation. I believe that the inventors of the present application were the first to use pulse modulation to compensate for the dimness in individual pixels to achieve light leveling or uniformity across the entire micromirror system for array synthesis. In summary, my patent does not suggest pulse modulation to correct non-uniform illumination at the individual pixel level.

6. With respect to Sweatt & Stulen, the Examiner cited only a single passage (*i.e.*, Column 3, lines 10-28) that merely disclosed the basic operation of a maskless microarray instrument. That is, light is directed toward the substrate by moving micromirrors between one of two positions ("on" and "off"). This passage, however, does not disclose or contemplate pulse modulation. Like my patent, Sweatt & Stulen therefore only relates to global distribution of light, and how micromirrors work in general, not the distribution of light at the pixel level. Simply turning individual micromirrors either "on" or "off" without some feedback or correction measurements and control does not correct non-uniform illumination at individual pixels. Consequently, Sweatt & Stulen do not correct for any non-uniformities from the light source or from other optical elements in the light path. Thus, the passage cited by the Examiner does not provide one skilled in the art with any teaching, motivation or suggestion to measure illumination intensity at different positions (*i.e.* pixels) on a microarray, evaluate the intensity differences and then adjust the intensity of brighter positions to match that of the less bright positions.

7. With respect to Baker *et al.*, the Examiner cited a passage (Column 2, lines 1-34) that disclosed non-uniform illumination as a problem. This issue of non-uniform illumination was known to those skilled in the art; however, the solution was evasive and not known. Baker *et al.*, attempted to solve this problem by using filters, and optionally, homogenizers. Notably, filters and homogenizers are optical elements added to the light path to correct for global nonuniformities in a passive way. In addition, Baker *et al.* did not use micromirrors, as evidenced by their use of masks. Furthermore, and like the previously discussed documents, Baker *et al.* was directed only toward the global distribution of light. One skilled in the art

recognizes that optical elements after the filter can still introduce non-uniform light. Moreover, one skilled in the art also recognizes, and Baker *et al.* specifically teaches, that the filter itself transmits non-uniform light. See Column 7, lines 34-46. Accordingly, non-uniform illumination is attenuated, but not completely corrected by Baker *et al.* To correct for any residual non-uniformities that remain after the filter, again, only on a global scale, Baker *et al.* disclosed the use of a homogenizer, not pulse modulation.

8. Next, the Examiner cited passages from Baker *et al.* (*i.e.*, Column 6, lines 11-25 and Column 7 line 35 to Column 8, line 30) that discussed a method of making a filter. These passages, however, only disclose filters with different thicknesses, with different sizes or the amount of current, voltage electric field or magnetic field applied to the filter. See Column 2, lines 26-35. Quite simply, Baker *et al.* identified a problem -- non-uniform illumination, which was solved with the filter, not pulse modulation. Therefore, I believe that the passages cited by the Examiner either alone or in combination do not lead a skilled person in the art to measure illumination intensity at different positions (*i.e.*, pixels) on a microarray, evaluate the intensity differences and then adjust the intensity of brighter positions to match that of the less bright positions. Also, the methods suggested by Baker *et al.* are more complex and do not offer the resolution possible for correction to non-uniformity that can be achieved with pulse modulation.

9. I hereby declare all statements made herein of my own knowledge are true and all statements made on information and belief are believed to be true; and further that these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and the such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Respectfully submitted,

Dated: June 26, 2007


Harold R. Garner

HAROLD RAY (Skip) GARNER, Jr.

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Harold.Garner@UTSouthwestern.edu

PROFESSION: Experimental Research Physicist and Biomedical Researcher.

BIRTHDATE: February 5, 1954

SECURITY CLEARANCE: DoD Secret (no longer active)
DOE 'Q' (no longer active)

MARITAL STATUS: Married to Kim Menier

EDUCATION:

B.S. (Nuclear Engineering) University of Missouri, Rolla (1976)
M.S. (Nuclear Engineering) University of Wisconsin, Madison (1978)
Ph.D. (Plasma Physics) University of Wisconsin, Madison (1982)
P.E. (Nuclear Engineering, honorary) University of Missouri, Rolla (1994)

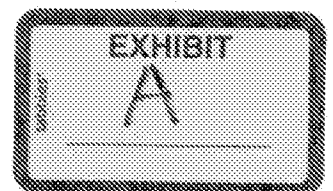
PhD. THESIS TOPIC:

"Low-Frequency Turbulence, Particle and Heat Transport in the Wisconsin Levitated Octupole"
written under the direction of Professor R.S. Post.

WORK EXPERIENCE:

1974 to 1976 - Announcer/Technician at KMNR FM Radio, Rolla, Missouri
1976 - Nuclear Engineer, INSITE Program at Argonne National Laboratory, Chicago, Illinois
1976 to 1982 - Research Assistant in Plasma Physics at University of Wisconsin
1979 to 1980 - Technical Advisor/Consultant for LaFollette, Anderson, Sinkin, and Munson
Law Firm, Madison, Wisconsin
1982 to 1986 - Senior Scientist for Fusion Division at General Atomics in San Diego
1986 to 1994 - Appointed to the Institute for Development & Application of Advanced
Technology at General Atomics
1990 to 1994 - Scientific Advisor and founder of HELIX, biotech spinout of General Atomics
1991 to 1993 - Principle Scientist and founder of the Biosciences Division, General Atomics
1993 to 1994 - Senior Staff Scientist for the Biosciences Division, General Atomics
1994 to 1998 - Associate Director, Genome Science and Technology Center, UTSW
1999 to 2002 - Program Chair, Biomedical Engineering, UTSW/UTA
1999 to present - Founding member of the Center for Biomedical Inventions, UTSW
1994 to present - P. O'B Montgomery Distinguished Chair in Developmental Biology,
Professor of Biochemistry and Internal Medicine, McDermott Center for Human Growth &
Development, UTSW

ORGANIZATIONS:



HAROLD RAY (Skip) GARNER, Jr.

Biophysical Society, American Physical Society, HUGO, IEEE, The Cousteau Society, Fusion Power Associates, Japan Karate Association, Planetary Society, San Diego Zoological Society, Tau Beta Pi, Who's Who, Who's Who of California, Fine Woodworkers Association, Sigma Xi, American Association of Cancer Researchers, American Institute for Medical and Biological Engineering (AIMBE), American Cancer Society, Society for Genome Biology and Technology, International Society of Computational Biology

HONORS/PROFESSIONAL ACTIVITIES:

Fellow of the American Institute for Medical and Biological Engineering
Charter member of the Academy of the School of Mines and Metallurgy and Order of the Golden Shillelagh, University of Missouri - Rolla
Advisor and program reviewer (current or previously) for: Drosophila Genome Center Advisory Committee, Berkeley, CA; Program reviewer for the National Institutes of Health, National Center for Human Genome Research, National Cancer Institute, SBIR program, Sequencing Advisory Group, NIH MIDAS steering committee; Program reviewer for the Department of Energy, Office of Health and Environmental Research, DOE Human Genome Subcommittee, BERAC; Steering Committee on Analytical Instrumentation for the National Science Foundation, reviewer for National Science Foundation; reviewer for NASA Mars Rover and Scout Missions; advisor to the National Research Council; Advisory Board, North Texas Life Science Society; reviewer for Genome Canada, a non-profit corporation, reviewer for State of South Carolina.
Member of the NIH/NCI Cancer Biomarkers (CBSS) study section.
Chair of study section for Susan G. Komen Breast Cancer Foundation
Journal reviewer for: Genomics, Nature Biotechnology, BioTechniques, Review of Scientific Instruments, IEEE Spectrum, Nature Genetics, Oncology, Bioinformatics, Biomed Central Genomics, Nucleic Acids Research, Royal Society of Chemistry Journals.
Associate Editor for IEEE Engineering in Medicine and Biology, Scientific Computing and Automation, IEEE Transactions on Automation Science and Engineering, Editorial Board of the Journal of the Society for Experimental Biology and Medicine
Scientific Advisory Board for Stratagene, TissueGen (no longer active), MWG (Germany), GeneTraks (Australia), Vitruvius Biosciences, The Texas Japan Genomics Corporation (Japan, no longer active), BioAutomation, Nimblegen, Inc., Vindauga Ventures
Founder of Light Biology (now Nimblegen), founder and CSO of etexx Biopharmaceuticals, Board of Directors, Deltateq Instruments, Inc.
University Committees on Internet Security, BME JGSC, REISSCO (electronic resources advisory committee), Clinical Registry
External Advisory Committee, Carolina Center for Genome Sciences, UNC
Advisory Council, Green Center for Systems Biology Science, UTD
Advisory Board of the Hong Kong - Europe New Life Science Seed Capital Fund

OTHER PROFESSIONAL ACTIVITIES (past and current):

Organizer of the Human Genome Automation Special Interest Group, with Glen Evans (Salk) and Jeff Quint (Beckman Instruments).
Outreach Coordinator for Biosciences Division at General Atomics.
Executive Advisory Committee for the Small Manufacturers Automation Resource and Training Center at the St. Louis Community College.
Chairman of the Advisory Board for Kid Lab, a Science Program for Young People in San

HAROLD RAY (Skip) GARNER, Jr.

Diego, California.

Lecturer in High Temperature Superconductivity, Advanced Materials and Biotechnology for Kid Lab in San Diego, California.

RESEARCH SPECIALTIES:

Plasma Physics - International Cooperation and Program Principle Investigator in Mirror Confinement Systems, ICRF and ECRF Heating, Plasma Diagnostics, Tokamak Edge Physics, Pump Limiters and Divertors, Advanced Fuel experiments on Levitated Octupole, Stellarators, Mirror Cusp Experiments, Plasma-Acoustic Interactions, Plasma Based Low Energy Neutral Sources, Transport, Tandem Mirror Physics

Biotechnology - Microwave Spectroscopy of Macromolecules (DNA, Proteins, etc.), Microwave and Spectroscopic Diagnostic Development, Resonant Acoustic Damping in DNA, Recombinant DNA, PCR Amplification, Optical Diagnostic Development/Commercialization, Bioreactors, YACs, Superfluorescence, DNA Sequence Analysis/Informatics, Automation/Robotics, Protocol/Methods development, STM/AFM, Hyperspectral Imaging, Biological Arrays, Biomedical Text Data-Mining, Pharmaceutical Development, Evolution, Proteomics, Tissue Engineering, Drug Discovery

Computer Science - Expert Systems Application/Knowledge Base writer, Data Acquisition, Fortran, Assembler, C, ADA, Operating system use from Macintosh to Cray II, Registered Macintosh and Hewlett Packard product developer, Parallel processing using transporter arrays and superparallel computers and clusters, Data Mining

Optics - Hyperspectral Imaging, Holographic Projection/3D TV, spectrophotometric instrumentation, Variable Spectrum Sources, UV image projection

Accelerator Physics - Design/Construction/Testing of IXRS, a new Microwave driven electron cyclotron

Acoustics - Acoustic Levitation, Particle Agglomeration, Acoustic modes in solids, Acoustic Enhanced Plasma Breakdown, SAWs, Chromosome Sorting

High Temperature Superconductivity - Solid State NMR and wire coating

Electronics - High and Low Frequency Analog, Digital, High Voltage, High Power, Pulsed, 3rd Class Radio Telephone Operator

Microwaves - High Power Plasma Heating and Diagnostics to 140 GHz, Homodyne and Heterodyne Systems, component development

Lasers - Pulsed and CW lasers for plasma diagnostics, Excimer laser development

Reactor Physics - Reactor Operations and Fermi Chopper design/construction/use at University of Missouri Research Reactor

Radiation Shielding/Monitoring - Instructor for a laboratory class at University of Wisconsin, Madison

Submarine Stealth and Communications, Thermonuclear Weapons, SDI -

Forensics and Paternity - Expert witness

PUBLICATIONS:

My publications list includes books, papers in refereed journals, invited talks, non-refereed journal papers, internal reports at General Atomics, Institute of Plasma Physics at the University of Nagoya-Japan, the University of Wisconsin And conference abstracts.

PATENTS:

HAROLD RAY (Skip) GARNER, Jr.

Method and composition for the treatment of cardiac hypertrophy (with Mounir Errami) -- Filed
A computer-based method for creating collections of sequences from a dataset of sequence identifiers corresponding to natural complex biopolymer sequences and linked to corresponding annotations -- to issue ~May, 2006
Computer Program products, Systems and Methods for Information Discovery and Relational -- Filed, Japan
Analyses Holographic Projector- Filed
Informational Discovery and Relational Analysis using the IRIDESCENT system -- Filed in US, Japan and Australia
Prediction of disease-causing alleles from sequence context -- Filed
A program for Microarray Design and Analysis -- 7,065,451
Digital Micromirror Holographic Projector -- 6,646,773
eTBLAST, a text search tool -- Filed
Identification of Chemically Modified Polymers -- Filed
Devices, Methods and Systems for High-resolution High-throughput Genetic Analysis -- Filed
Optical Correlator using Spatial Light Modulation Illumination (with R. Gale, TI) --- 6,819,807
Variable Spectrum Synthesizer -- 6,657,758
Polymorphic Repeats in Human Genes -- 6,472,154
Hyperspectral Imaging Microscope -- 6,337,472
Digital Optical Chemistry Micromirror Imager -- 6,295,153
Digital Optical Chemistry Micromirror Imager -- Divisional Filed
Digital Optical Chemistry Micromirror Imager -- Conversion Filed
Hyperspectral Slide Reader -- 6,160,618
Automatic Sequencer/Genotyper Having Extended Spectral Response - 5,871,628 and 6,427,126
Micropipette Adaptor for Spectrophotometers - No. 4,991,958 and NI-48394 Taiwan
Coaxial Microwave Absorption Diagnostic - No. 4,990,858
Spectrophotometer to Fluorometer Converter (with L. Peranich) - No. 5,094,531
Micropipette Adaptor for Spectrophotometers with Temperature Control - No. 5,092,674
Micropipette Adaptor for Spectrofluorometers - No. 5,104,218
Assembly for converting a Spectrophotometer to a Fluorometer - No. 5,166,743
Micropipette Adaptor with Temperature Control for PCR Amplification - No. 5,241,363
Micropipette Adaptor for Spectrofluorometers having an Integrated Optical System - patent to issue
Coated Capillary Tube for Controlled Release of Reagents (with O. Tuason, L. Peranich) - No. 5,387,526
Automated Method for Determining the Base Sequence of a Nucleic Acid Chain - (with M. Alringer and G. Shephard) - patent filed
Multi-Well Microtiter Tray (with G. Shephard) - US patent to issue, No. 0922905 (France) and No. M 90 03 555.8 (Germany)

RESEARCH FUNDING HISTORY:

1983 - 1988, DoE contract for International (Japan) Plasma Physics Studies, initially \$150k/year to ~\$650k/year.
1992 - 1994, NIH grant, High-Throughput Screening of YAC Libraries, as part of the program project grant, Glen Evans (The Salk Institute), director, ~180k/year.

HAROLD RAY (Skip) GARNER, Jr.

- 1992 - 1995, NIH grant, High-Throughput HGP Automation System, ~\$588k (3 year).
- 1994 - 1998, co - PI with Glen Evans, NIH GESTEC grant, UT - Southwestern Genome Center, ~\$16M, (4 year).
- 1995 - present, PI " Optoelectronic Hybridization Microsensor", Whitaker Foundation, ~800k\$, (4 year).
- 1996 - 1997, co - PI with Glen Evans, DoE grant, A PAC end-sequence Database for Human Genomic Sequencing.
- 1996 - 1997, PI, Texas Instruments grant, Optical Hybridization Microsensor and Beyond.
- 1997 - 2000, co - PI with Ron Butow, NIH/NCI grant, The Large-scale Functional Analysis of the Yeast Genome.
- 1998 - present, PI on a Developmental Grant as part of UTSW/MDA cancer SPORE, John Minna, PI on SPORE grant, ~\$100k/year
- 1998 - 2002, PI on sponsored research agreement with Beckman Instruments
- 1998 - 2000, PI on DOE grant, Technology Support for JGI and SPP, \$493k, (2 years)
- 1999-2001, Investigator on Reynold's Foundation Cardiac Disease Center grant, \$24M (4 years)
- 1999 - 2004, PI on Software and Instrumentation for the Identification of Cancer Genes, NIH/NCI grant, \$625k/year (3 years)
- 1999 - present, PI on SNooP-A directed search for genetic variation, State of Texas Advanced Research Projects grant, \$198k (2 years)
- 1999 - 2001, Co-PI on Hyperspectral Microscopic Imaging, State of Texas Advanced Research Program, \$142,750/year (2 years)
- 2000 - 2004, PI Genomics and proteomics of cell injury and inflammation, NIH/NHGRI program project grant, \$811k/year (3 years)
- 2001 - 2003, PI Phase-controlled Imaging with Digital Light Processing, Texas Advanced Research Projects grant, \$125,000/year (2 years)
- 2002 - present, PI, NIH/NHGRI Proteomics Center, ~\$400k/year (7 years)
- 2002 - present, Hudson Foundation, \$40k (year 1), \$60k (year 2)
- 2002 - present, Investigator, BioThreat Center, UT Austin, Steven Kornuth, PI., \$20k/year
- 2003 - present, PI for NIH R01 grant, Microsatellites and their role in cancer, \$200k/year (3 years)
- 2003 - present, PI for Computational Biology Core for Midwest Regional Center of Excellence, NIH/NIAID, \$350k/year
- 2006 - present, Phase I NASA SBIR with Lynntech, Monitoring stress on high altitude balloon materials using hyperspectral imaging

STUDENTS MENTORED:

- Kari Kukanskis - M.S., BME 1998, Molecular Staging
- Jeff Zavaleta - UT Austin Undergraduate Thesis Reader, 1998, UTSW Med School
- Ashwine Pande Patil - M.S., BME 1999, Biosciences Dept., Univ. of Osaka
- Greg Miller - PhD. BME 1999, Cumbre, Inc.
- Varshal Dave - MS, Cell and Molecular Biology, 1000, Axon, Inc.
- Robert Balog - Ph.D., BME and Cell and Molecular Biology, 2003, US Army Active
- Amit Kulkarni - M.S., BME, 2002, Rosetta Informatics/Merck, Inc
- Trey Fondon - Ph.D., Biophysics, 2003, post-doc, independent fellow, UTSW

HAROLD RAY (Skip) GARNER, Jr.

Jonathan Wren - Ph.D., Cell and Molecular Biology, 2003, Univ. of Oklahoma
Elizabeth Cronin - Ph.D. BME, 2003 (with Kevin Nelson), new mother
Monica Hovarth - Ph.D. 2004, Cell and Molecular Biology, UTSW, NIEHS
Steve Crozier - Ph.D., Biophysics, UTSW
Ryan Weil - Ph.D. Cell and Molecular Biology, UTSW, Roche
Nishanth Marthandan - M.S. BME, UTSW, bioinformaticist
Jose Cabrera - M.S., Biomedical Communications, UTSW, free-lance in Dallas
Dipanjana Bhattacharya - Ph.D., Biophysics, UTSW
Robert Longnecker - M.S., BME, UTA
Vinayak Kulkarni - Ph.D., BME, UTSW
Amruta Joshi - M.S., BME, UTA

POST DOCTORAL FELLOWS MENTORED:

John "Trey" Fondon - Post-doc, Bioinformatics/Genetics (now, McKnight fellow, UTSW)
Yuri Belosludtsev - Post-doc, Chemistry (now CEO of Vitrivious Biosciences)
Simon Rayner - Post-doc, Instrumentation (now CSO of BioAutomation)
Ping Li - Post-doc, Bioinformatics (current association unknown)
Kevin O'Brien - Post-doc, Instrumentation (now at Merck, Inc.)
Jim Yan - Post-doc, Bioinformatics (now at Pioneer Hybrid, Inc.)
Shawn Roach - Post-doc, Chemistry (now at EyeTech)
Alex Pertsemidis - Post-doc, Bioinformatics (now Research Faculty, UTSW)
Kevin Tang - Post-doc, Bioinformatics (now at the CDC)
Jing Shen - Post-doc, Bioinformatics (now at UTSW microarray core)
Yun Lian - Post-doc, Bioinformatics (now independent consultant, Dallas)
Tracy Xu - Post-doc, Bioinformatics (now at PA school at UTSW)
Evgeni Pollakov - Post-doc, Instrumentation (now at Redstone Arsenal)
Elizabeth "Lena" Flood - Post-doc, Molecular Biology
Mike Huebschman - Post-doc, Instrumentation
Wayne Fisher - Post-doc, Bioinformatics
Mounir Errami - Post-doc, Bioinformatics
Cristi Galindo - Post-doc, Genomic data interpretation
My-Hanh Nguyen - Post-doc, Bioinformatics and Genomics

LECTURER IN COURSES AT UTSW:

Div. of Cell and Molecular Biology Core Course - Bioinformatics
Human Genetics - Bioinformatics
Introduction to Biomedical Engineering - Biocomputing and Technology
Lab Principles in Biomedical Engineering - Bioinformatics
Ethics
Proteomics Special Course
Experimental Approaches to Human Biology and Disease (UTSW MD/PhDs)
Summer Workshop for Div. of Cell and Molecular Biology - Microarrays
UTSW Library course - Text data searching and mining

HOBBIES:

Karate (Shotokan - presently 1st degree Black Belt and Instructor), Aikido, Running, Woodworking, Photography, Camping, SCUBA Diving, Surfing, Snowboarding, Bicycling, Oil Painting.

HAROLD RAY (Skip) GARNER, Jr.

HAROLD RAY (Skip) GARNER, JR.
PUBLICATIONS:

Books:

1. Michael L. Huebschman, Roger A. Schultz, and Harold R. Garner, Hyperspectral Imaging, Review chapter, Encyclopedia of Modern Optics, Academic Press, 2004
2. H.R. Garner, Software and enhancements to gel-based sequencers, BioComputing, a book in the BioFocus Update Series, in press, 2002.
3. K. J. Luebke, R. P. Balog, D. Mittelman and H.R. Garner, Digital Optical Chemistry: A Novel System for the Rapid Fabrication of Custom Oligonucleotide Arrays, a chapter in Microfabricated Sensors, Application of Optical Technology for DNA Analysis, Richard Kordal, Author Usmani and Wai Tak Law, editors, American Chemical Society Publications, 2002. (the book cover featured one of our arrays)
4. G. Miller J. Jacklevic, and H.R. Garner, chapter in Instrumentation for the Genome Project, Annual Reviews of Biomedical Engineering, Joe Jacklevic, editor, 1999.
5. H.R. Garner, "Custom Hardware and Software for Genome Center Operations: From Robotic Control to Databases," included in Automated Technologies for Genome Characterization, edited by Dr. Tony J. Beugelsdijk, 1997.
6. H.R. Garner, "Automating the PCR Process," Chapter 16 in The Polymerase Chain Reaction, K. Mullis, F. Ferre, R. Gibbs editors, March 1994.
7. S. Clark, G. Evans and H.R. Garner, "Informatics and Automation used in the Physical Mapping of the Genome," Chapter 2 and D.W. Smith, J. Jorgensen, J. P. Greenberg, J. Keller, J. Rogers, H.R. Garner and L. T. Eyck, "Supercomputers, Parallel Processing, and Genome Projects," Chapter 3 in Biocomputing: Informatics and Genome Projects, D. Smith (UCSD) editor, December 1993.
8. H.R. Garner and L. S. Peranich, Chapters 6 and 7 titled "Radial Transport Issues" and "RF Tandem Mirror Modes", of the book Radio Frequency and Cusp Confinement edited by T. Sato, and K. Takayama, I.P.P. - Nagoya, publishers, 1989.
9. Contributions to Chapter 3 of KARATE, Synchronization of Body and Mind, by S. Sugiyama and his students. (1980)

Refereed Journals:

1. José A. Cabrera, Kim Hoggatt-Krumwiede, Lewis Calver, Harold Garner, Expanding Researchers' Understanding of Effective Corporate Identity Design for Company Spin Outs, accepted, Journal of Biomedical Communications, 2007
2. Tony J. Ragucci, Alan Cisar, Michael L. Huebschman and Harold R. Garner, Film Strain Measurement through Hyperspectral Polarimetry, Proceedings of American Institute of Aeronautics and Astronautics, 2007
3. D. C. German, P. Gurnani, A. Nandi, H. R. Garner, W. Fisher, R. Diaz-Arrastia, P. O'Suilleabhain, K.P. Rosenblatt, Serum biomarkers for Alzheimer's disease: proteomic discovery, in press, Biomedicine and Pharmacotherapy
4. Jyoti K. Shah, Harold R. Garner , Michael A. White, David S. Shames and John D. Minna, siR: siRNA Information Resource, a web-based tool for siRNA sequence design and analysis and an open source siRNA database, in press, BMC Bioinformatics
5. Mark F. Burkart, Jonathan D. Wren, Jason I. Herschkowitz, Charles M. Perou and Harold R. Garner, Clustering of Microarray-Derived Gene Lists through Implicit Literature Connections, in press, Bioinformatics
6. Wayne G. Fisher, Kevin P. Rosenblatt, David A. Fishman, Gordon R. Whiteley, Alvydas Mikulskis, Scott A. Kuzdzal, Mary F. Lopez, and Harold R. Garner, A Robust Biomarker Discovery Pipeline for High Performance Mass Spectrometry Data, Journal of Bioinformatics and Computational Biology, Vol. 5, No. 5, Oct. 2007
7. Kar-wai Ng and Harold R. Garner Nome della Proteina: A protein identification resolution database, in press, IEEE Engineering in Genomics, July, 2007.
8. Mounir Errami, Jonathan D. Wren, Justin M. Hicks and Harold R. Garner, eTBLAST: A web server to identify expert reviewers, appropriate journals and similar publications, Nucleic Acids Research server issue, July, 2007
9. Jeffrey Laidlaw, Kar-wai Ng, Harold R. Garner, Rama Ranganathan, John W. Fondon III, Elevated basal slippage mutation rates among the Canidae, J Hered. 2007 Apr 16
10. Amin A. Fadl, Cristi L. Galindo, Jian Sha1, Fan Zhang, Harold R. Garner, Hui-Qun Wang, and Ashok K. Chopra1, Global Transcriptional Responses of Wild-type Aeromonas hydrophila and its Virulence-deficient Mutant in a Murine Model of Infection, Microb Pathog. 2007 May-Jun;42(5-6):193-203
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143. H.R. Garner, keynote talk at the NSF EPSCoR Functional Genomics conference, Stillwater, OK, May 19, 2005
144. H.R. Garner (delivered by Michael Huebschman), San Francisco, 2005
145. H.R. Garner, Copenhagen, Denmark, 2004
146. H.R. Garner, Cambridge, UK, 2004
147. H.R. Garner, "Plasma Confinement in RFC-XX-M, An Axisymmetric Cusp End Celled Mirror Machine," Bulletin of the American Physical Society, Vol. 29, No. 8 (1984).
148. H.R. Garner, "Prototype Automated Instrumentation for the Human Genome Project," Scientific Computing & Automation conference, October 14, 1992, Washington D.C.
149. H.R. Garner, "Information Processing and the Demands of Molecular Biology," 1993 Clinical Chemistry Conference on Advanced Analytical Concepts for the Clinical Laboratory, Oak Ridge, TN, April 22, 1993.

150. H.R. Garner, "Advanced Instrumentation, Automation and Informatics for the Human Genome Project, General Biology and Medicine," Fusion Power Associates - Technology Transfer Symposium, Oak Ridge, TN, October 5 -7, 1993.
151. H.R. Garner, "Lab Automation in the Human Genome Project," Scientific Computing & Automation Conference, Washington, D.C., October 11-13, 1993.
152. H.R. Garner, "Coordinating Robotics and Informatics in the Industrial and Research Laboratory," 3rd International Conference on Automation, Robotics and Artificial Intelligence applied to Analytical Chemistry and Laboratory Medicine, January 25-28, 1994.
153. H.R. Garner, "Advances in Automated DNA Sequencing," Human Genome Project: Commercial Implications, February 28, 1994.
154. H.R. Garner, "Instrumentation and Informatics Tools for Rapid Genomic or Diagnostic Analysis via PCR," PCR and Alternative Amplification Technologies for Diagnostics, Intercontinental Hotel, San Francisco, CA, April 20-22, 1994.

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180. H.R. Garner, D. Price, D. Baker, R. Freeman, P. Parks, A. Sleeper, T. Sato, S. Okamura, K. Adati, R. Kumazawa, T. Aoki, H. Fujita, "Performance of Cusp Anchor/Plugs on the RFC-XX Tandem Mirror," Conference Record of 1984 IEEE International Conference on Plasma Science, IEEE Pub. Nol. 84CH1958-8, 1984, p. 4p8
181. H.R. Garner, et.al. "Negative Potential Mode in RFC-XX-M," Conference Record of the 1986 IEEE International Conference on Plasma Science, Saskatoon, Saskatwan, Canada, May 19-21, 1986.

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182. G. Evans¹, D. McElligott¹, S. Clark¹, H. Garner², L. Selleri¹, J. Hutchinson¹, Y. Wei¹, A. Churukian¹, M. Peterson¹, K. Diggle¹, J. Quackenbush¹, A. Romo¹, N. Nowak³, S. Quin³, T. Shows³, and M. W. Smith¹, ¹Human Genome Center, The Salk Institute for Biological Studies, San Diego, CA, ²Institute for Advanced Technologies, General Atomics Corporation, San Diego, CA, ³Roswell Park Cancer Institute, Buffalo N.Y., Cold Spring Harbor Mapping and Sequencing meeting, May, 1993.
183. H. Garner¹ and G. Evans², ¹Institute for Advanced Technologies, General Atomics, San Diego, CA; ²Salk Institute, San Diego, CA, "Custom, high-throughput automation for the human genome project," Cold Spring Harbor Mapping and Sequencing meeting, May, 1993.
184. H. Garner¹, B. Armstrong¹, D. Kramarsky¹, K. Snider², and G.A. Evans², ¹Institute for Advanced Technologies, General Atomics Corporation, San Diego, CA; ²Human Genome Center, The Salk Institute for Biological Studies, San Diego, CA, "Development and application of new, high-throughput automation for large scale physical mapping of human chromosomes," Cold Spring Harbor Mapping and Sequencing meeting, May, 1993.

185. H. Garner¹, M. Alringer¹, R. Matson², and J. Quint², ¹Institute for Advanced Technologies, General Atomics Corporation, San Diego, CA; ²Beckman Instruments, Fullerton, CA, "Advances in automation of amplification and high density gridding," Cold Spring Harbor Mapping and Sequencing meeting, May, 1993.
186. H.R. Garner¹, G.A. Evans², ¹Institute for Advanced Technologies, General Atomics Corporation, San Diego, CA; ²Human Genome Center, The Salk Institute for Biological Studies, San Diego, CA, "Prototype Automated Instrumentation for the Human Genome Project," DoE Contractor-Grantee Workshop III, Sant Fe, NM, February 7-10, 1993.
187. H. R. Garner, B. Armstrong, D. Kramarsky, G. Evans (Salk) and K. Snyder (Salk), "Development and Application of New, High-Throughput Automation for Large Scale Physical Mapping of Human Chromosomes," a poster at the Cold Spring Harbor Mapping and Sequencing meeting, May, 1992.
188. H.R. Garner, M.A. Alringer, "The Macintosh Autorad Sequence System,"
 - a. AIP Conference on Computational Physics, June, 1991.
189. H.R. Garner, O. Tuason, R.L. Lee, "Oligonucleotide Properties Measured with Fluorescence," The Fifth San Diego Conference, Nucleic Acids: New Frontiers, American Association of Clinical Chemistry, 11/14-16/90
190. H.R. Garner, T. Ohkawa, O. Tuason, R.L. Lee, "Properties of the Hydration Layer Studied with Microwave Absorption Spectroscopy," Thirty Fifth Annual Meeting of the Biophysical Society, 2/24-28/91
191. T. Sato, S. Okamura, K. Adati, T. Aoki, D. R. Baker, H. Fujita, H.R. Garner, K. Hattori, S. Hidekuma, T. Kawamoto, R. Kumazawa, Y. Okubo, and K. Uchino, "Buildup and Sustainment of 10^{13} cm^{-3} Plasma by ICRF in RFC-XX, Proc. US-Japan Workshop on Advanced Bumpy Torus Concepts, Rancho Sante Fe, 1983, Oak Ridge National Laboratory CONF-830758, p. 365.

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192. H.R. Garner, "Measurement of the Ionization Profile in RFC-XX using hydrogen alpha radiation," GA-A17362, 4/1/85
193. A.M. Sleeper, T. Aoki, K. Hattori, D.R. Baker, S. Okamura, H. Fujita, T. Kawamoto, H.R. Garner, K. Adati, S. Hidekuma, P.B. Parks, "Stability studies of a hollow plasma in the RFC-XX double cusp," GA-A17396, 12/1/83
194. H.R. Garner, H.D. Price, "Azimuthal Nonuniformities induced by ECH and ICH in the RFC-XX mirror plasma," GA-A17588, 10/1/84
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199. H.R. Garner, "End of three-year contract report on the RFC-XX-M device research Nagoya, Japan March 1, 1983 thru December 31, 1985," GA-A18341, 4/1/86
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